What is claimed is:

1. An optical information recording medium comprising:

a transparent substrate;

a recording layer disposed on the transparent substrate; and

a reflective layer disposed on the recording layer,

the optical information recording medium being capable of performing at least one of recording, erasing and rewriting information by irradiating and scanning with focused light to thereby form and erase recording marks on the recording layer,

wherein the recording layer comprises at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te in a compositional ratio represented by the following formula:

$$Ga_xGe_y(Sb_zTe_{1-z})_{1-x-y}$$

wherein x, y, and z each represent an atomic ratio of a positive real number less than 1 and satisfy the following conditions:

$$0.02 \leq x \leq 0.06$$

$$0.01 \leq y \leq 0.06$$

$$0.80 \leq z \leq 0.86$$

$$x \geq y$$

$$x+y \leq 0.1.$$

2. An optical information recording medium according to Claim 1, wherein the atomic ratio z satisfies the following condition:

$0.815 \leq z \leq 0.86$.

3. An optical information recording medium according to Claim 1, wherein the content of the at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te in the recording layer is 90 atomic percent or more.

4. An optical information recording medium according to Claim 1, wherein the at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te further comprises at least one selected from the group consisting of Ag, Dy, Mg, Mn, Se, and Sn in an atomic ratio of from 0.01 to 0.04.

5. An optical information recording medium according to Claim 1, wherein the at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te further comprises Mn in an atomic ratio of 0.01 to 0.04.

6. An optical information recording medium according to Claim 1, wherein the recording layer has a thickness of 10 nm to 25 nm.

7. An optical information recording medium according to Claim 1, having a preformatted scanning speed of at least one of recording, erasing and rewriting procedures, and wherein the

preformatted scanning speed is from 9.6 m/s to 33.6 m/s.

8. An optical information recording medium according to Claim 1, wherein the reflective layer comprises at least one of Ag and an alloy comprising 95% by mole or more of Ag.

9. An optical information recording medium according to Claim 1, wherein the reflective layer has a thickness of 800 nm to 3000 nm.

10. An optical information recording medium according to Claim 1, further comprising an oxide layer adjacent to at least one side of the recording layer, the oxide layer mainly comprising at least one oxide and having a thickness of 1 nm to 5 nm.

11. An optical information recording medium according to Claim 10, wherein the oxide layer mainly comprises at least one selected from the group consisting of Al_2O_3, SiO_2, TiO_2, ZrO_2, Y_2O_3, and ZnO.

12. An optical information recording medium according to Claim 1, further comprising at least one protection layer having a thickness of 5 nm to 50 nm.

13. An optical information recording medium according to

Claim 1, which can undergo initialization by irradiating and scanning with a laser beam having a power consumption of 500 mW or more at a scanning speed of 1 m/s to 2.5 m/s.

14. A sputtering target for the production of optical information recording media, comprising at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te in a compositional ratio represented by the following formula:

$$Ga_xGe_y(Sb_zTe_{1-z})_{1-x-y}$$

wherein x, y, and z each represent an atomic ratio of a positive real number less than 1 and satisfy the following conditions:

$$0.02 \leq x \leq 0.06$$

$$0.01 \leq y \leq 0.06$$

$$0.80 \leq z \leq 0.86$$

$$x \geq y$$

$$x+y \leq 0.1.$$

15. A sputtering target according to Claim 14, wherein the content of the at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te is 90 atomic percent or more.

16. A sputtering target according to Claim 14, wherein the at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te further comprises Mn in an atomic

ratio of 0.01 to 0.03.

17. A process for initializing an optical information recording medium, comprising irradiating and scanning the optical information recording medium with a laser beam having power consumption of 500 mW or more at a scanning speed of 1 m/s to 2.5 m/s to thereby initialize the optical information recording medium,

wherein the optical information recording medium comprises:

a transparent substrate;

a recording layer disposed on the transparent substrate; and

a reflective layer disposed on the recording layer,

wherein the optical information recording medium is capable of performing at least one of recording, erasing and rewriting information by irradiating and scanning with focused light to thereby form and/or erase recording marks on the recording layer, and

wherein the recording layer comprises at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te in a compositional ratio represented by the following formula:

$$Ga_xGe_y(Sb_zTe_{1-z})_{1-x-y}$$

wherein x, y, and z each represent an atomic ratio of a positive real number less than 1 and satisfy the following conditions:

$$0.02 \leq x \leq 0.06$$

$$0.01 \leq y \leq 0.06$$

$$0.80 \leq z \leq 0.86$$

$$x \geq y$$

$$x+y \leq 0.1.$$

18. A process for initializing according to Claim 17, wherein the laser beam has a power consumption of 900 mW or more.

19. A process for recording on an optical information recording medium, comprising irradiating and scanning the optical information recording medium with a laser beam,

wherein the optical information recording medium comprises:

a transparent substrate;

a recording layer disposed over one side of the transparent substrate; and

a reflective layer disposed over the recording layer,

wherein the optical information recording medium is capable of performing at least one of recording, erasing and rewriting information by irradiating and scanning with focused light to thereby form and erase recording marks on the recording layer, and

wherein the recording layer comprises at least one of alloys and intermetallic compounds each mainly comprising Ga, Ge, Sb, and Te in a compositional ratio represented by the following formula:

$$Ga_xGe_y(Sb_zTe_{1-z})_{1-x-y}$$

wherein x, y, and z each represent an atomic ratio of a positive real number less than 1 and satisfy the following conditions:

$$0.02 \leq x \leq 0.06$$

$$0.01 \leq y \leq 0.06$$

$$0.80 \leq z \leq 0.86$$

$$x \geq y$$

$$x+y \leq 0.1$$

wherein the recording marks are formed by irradiating and scanning the optical information recording medium with a pulse having an intensity of Pw and a pulse having an intensity of Pb alternately,

wherein a number m of the pulses having an intensity of Pw satisfies one of the following conditions: n=2m when n is an even number, and n=2m+1 when n is an odd number, where m is a natural number equal to n or less and n is a natural number, provided that a recording mark length is represented by nTw, wherein Tw is a reference clocking period,

wherein the recording marks are erased by irradiating and scanning the optical information recording medium with light having a constant intensity of Pe, and

wherein Pw, Pe, and Pb satisfy the following condition: Pw>Pe>Pb.

20. A process for recording according to Claim 19, wherein

n and m satisfy the following condition: n=m+1 when the scanning speed is 22.4 m/s or less and Tw is 14.4 ns or more.